J. Adelaide Bot. Gard. 17 223–225 (1996)

BOOK REVIEWS

Flora of Australia Volume 55, Lichens—Lecanorales 2, Parmeliaceae, Australian Biological Resources Study, Canberra (1994)

This volume, the second describing lichens and thus only the second volume to deal with non-angiosperm groups, presents a fine example for publications on cryptogamic botany (deference to purist mycologists aside, perhaps we can still include lichens in the field of botany). It is even able to stand with some equality among angiosperm taxonomic volumes, whereas many publications dealing with cryptogam taxonomy exhibit considerable shortcomings. There are, in fact, drawbacks to be considered with the cryptogam volumes of *Flora of Australia*, but some are not immediately obvious and all are probably unavoidable in Australia at present, for a variety of scientific and economic reasons. Cryptogam taxonomy in Australia is poorly understood, much more than angiosperm taxonomy, which itself is still considerably behind an ideal world standard in many areas. Almost total lack of funding has led for decades to a lack of researchers, which often has resulted in enthusiastic but poorly trained "amateur" taxonomists (which can include professional botanists trained in non-taxonomic fields), doing what little work has been done. Hence, the standard of knowledge expressed within the cryptogam volumes of *Flora of Australia* must inevitably be lower in many areas than that for the angiosperm volumes. The much greater time needed for microscopic examination of minute specimens will inevitably be reflected in smaller numbers of specimens being examined for treatments needed by a deadline. In many cases the quantity of specimens does not even exist, due to the lack of collectors with "trained eyes" for cryptogam taxa, or the specimens may be buried within unidentified backlogs in herbaria. Since the manuscripts will have been edited to the high and consistent standards of *Flora of Australia*, much of this inadequacy will not be apparent, but it is nevertheless true that the cryptogam volumes can only be "state of the art" and thus more or less preliminary in nature.

These comments aside, Volume 55 exhibits mainly results from a researcher of high standard with considerable experience in the groups described. Professor Jack Elix has become an eminent authority on Parmeliaceae in Australia due to years of painstaking examination of much material of the group, in both the field and the chemistry laboratory. The impression is gained that this broader and more complete knowledge has resulted in a more practical and useable treatment of these taxa than perhaps may be said for some groups in the first *Flora of Australia* lichen volume. Prof. Elix's keys seem to be aimed at practical, not pure academic, use and generally utilise characters and tools which may reasonably be expected to be available even to the interested amateur, not absolutely requiring use of techniques such as thin layer chromatography to separate species. Where more advanced chemical knowledge is used in keys, it appears always to be used as a secondary or supportive character. It is of concern that an apparently increasing level of what passes for contemporary lichen taxonomy seems based almost purely on chemical microspeciation and less practical authors than Prof. Elix have almost removed the ability to identify certain lichen genera even for those with expertise and only basic herbarium facilities, let alone the interested amateur.

The addition in this treatment of a synoptic key to genera of Parmeliaceae is a helpful and fresh approach to a complex family, giving added possibilities for identification and for comparisons at a broader level. The introductory and explanatory sections are helpful and clearly expressed. Whilst the 150 species of *Xanthoparmelia* (the largest lichen genus in Australia) may still be daunting to separate, it is likely no greater experience can or will be brought to bear upon this group in Australia for a very long time!

If the appearance of these first cryptogam volumes of *Flora of Australia* were to serve no other function than to draw together a basic coverage of known taxa and provide keys for them, a valuable service would have been performed. As for this volume, a substantially better result than that seems to have eventuated.

G.H. Bell
State Herbarium of South Australia

Welcome innovations in the first of two *Flora of Australia* Proteaceae volumes

Flora of Australia Vol. 16: Elaeagnaceae, Proteaceae 1. Available from CSIRO Publishing in hardcover (AUS$79.95 in Australia or New Zealand, US$79.95 elsewhere) or softcover (AUS$64.95 and US$64.95, respectively). Add $6 for postage and handling if purchased direct from CSIRO.

Apart from the small family Elaeagnaceae, this newest volume of the *Flora of Australia*, the seventieth overall since 1981 and the twelfth of 47 on the higher plants of the continent itself, is given over to one family. The publication of the first volume of treatment of the Proteaceae will, with the imminent completion of its companion volume 17, herald the first of Australia's six largest flowering plant families to be covered by the *Flora* programme (Compositae, Cyperaceae, Leguminosae s.lat., Myrtaceae and Gramineae are the others). This volume deals with 42 of the family's 46 Australian genera and roughly half of its 1100 species. *Grevillea*, *Hakea*, *Banksia* and *Dryandra* remain for volume 17.

A welcome first for *Flora* users is the series of brief introductory reviews. The first covers developments in the higher classification of the family and its relationships. Evidence is accumulating for the family's early origin amongst the flowering plants and long isolation and diversification. The bulk of the diversity in the family seems represented in Australia, but the biogeography could have been more readily apparent by inclusion in the tabulated synopsis. Two new subfamilies are described bringing the number of monotypic Australian subfamilies to four. The other tribes, the diverse and often specialised Proteoideae and Grevilleoideae and the Persoonioideae, less diverse but with primitive features, extend out of the continent. Morphological variation within each tribe or subtribe to a genus level, and in leaves, inflorescences, floral and fruit organs is also briefly reviewed, as well as dispersal (all too brief), pollination (too much on insects and specific examples, too little on floral syndromes, inadequately scotched as a phenomenon, or the species visited by the insects) and utilisation. These chapters would have benefited from recruitment of other specialists and of cross-referencing to significant references in the body of the *Flora* (e.g. resprouting ability of many species, at times inconsistently given, and the trigger pollination mechanism in *Synaphaea*). Some obscure terms are not in the glossary, including *crepuscular*, *innocuous* (refers generally to harmless: far better specify what is lacking, particularly as we are told that many Proteaceae are poisonous), *oligotrophic* (as to soils: why not *poor*?). Such terms needed in the reviews should be defined there (in brackets) for ease of reading.

The several largest genera treated (*Persoonia, Isopogon, Petrophile, Conospermum, Synaphaea, Adenanthos*) are, apart from the first, most diverse in southwestern Australia; the eastern and northern genera have fewer species. Many new species and three new genera (including the possible "living fossil" *Eidothea* and the brazen *Megahertzia*) are described. The identification keys appear good in providing correlated characters at leads, though of course they are generally dependent on complete material. May the developing practice of devising computerised multiple entry keys become a norm! Descriptive information in the *Flora* is still limited; for example, what does the fruit of *Adenanthos* look